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Correlation Papers issued by the U. S. Geological Survey. Originally Mr. Russell intended to cover the entire Jura-Trias of North America, but circumstances compelled him to restrict his attention to those of the Atlantic border. This particular body of rocks the author calls the Newark System, a name proposed by W. C. Redfield in 1856, giving as a reason that it is the oldest specific title not implying opinion as to geologic age. These rocks extend, from North Carolina to New Brunswick and Nova Scotia, but not to Prince Edward's Island, as has been asserted. They occur in narrow belts trending parallel to the application folds, covering an area of 10,000 square miles. It is Mr. J. Russell's opinion that the evidence now at hand bears out the theory that these detached areas are remnants of a once broad terrace which has been broken by orographic movements and greatly eroded.

The sedimentary rocks of the Newark System, consisting chiefly of sandstone and shale, were deposited in tide-swept estuaries, while the carbonaceous shales and coal seams originated in basins more shut off from the seas. The trap rocks are a part of the great system of dikes and sheets which intersect the surrounding crystalline and paleozoic rocks. The evidence of glacial action during the Newark period, Mr. Russell thinks is weak.

In discussing the relations of the Newark system to other terranes the author refers to the difficulty of correlating the rocks of America with those of other countries, and concludes that biological phenomena as a means of correlating, can be safely used only after the relative age of the strata has been determined from physical phenomena. Paleontologists of the Vertebrata will not concur in this view, for the vertebrate fossils indicate conclusively that the formation contains at least the representation of the upper member of the Trias or the Keuper. This was first definitely pointed out by E. D. Cope in 1866.[4]

The volume is accompanied by a very full bibliography, and is illustrated by many handsomely executed colored and uncolored plates. The colors of the geological maps are in general accordance with those in use by geologists.

Spalding's Guide to the Study of Common Plants.[5]—It is a pleasant thing to take up a new book and find our expectations not disappointed. The author of the little work before us has for many years been a successful teacher of Botany in one of our great State Universities, and has had not only the experience which his own teaching has brought him, but he has seen much of the results of botanical teaching in the high schools which annually send up their graduates to the University. The book is intended for use in such preparatory schools and was prepared in answer to frequent inquiries from high school teachers.

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[4] Proceedings of The Philadelphia Academy, pp. 249–50, 290. This reference is omitted by Mr. Russell from his table of determinations on p. 17, but is included in the Bibliography on p. 170.

[5] An introduction to Botany. By Volney M. Spalding, Professor of Botany in the University of Michigan. Boston, U. S. A. D. C. Heath & Co., Publishers, 1893, pp. XIII 246.

The leading thought in the book may be gathered from the following sentence in the chapter addressed to the teacher. "In order to use these exercises successfully it will be necessary to adopt the laboratory as distinguished from the text-book method of instruction."

Two short chapters are given to the discussion of the proper outfit for a botanical laboratory for high schools.

One of these includes lists of works of reference under several heads: "Laboratory Manaels," "Structural and Physiological," "Morphological and Systematic," "Floras," "Cryptogamic Botany," "General," and "Current Literature." The lists are well made and the author well says the books named "ought to have a place in any respectable school library."

The other chapter under this head gives good suggestions about the laboratory itself, the tables, microscope (small "Continental" stands recommended), glassware, regents, etc.

Then follow laboratory studies of seeds, growth of plants from the seed, root, leaf, flower and fruits. These serve to train the pupil to close observation. He then takes up the careful study of plants representing the natural groups of the vegetable kingdom. Thus the "Seaweeds and their Allies" are represented by pond scum (*Spirogyra*) and green felt (*Vaucheria*); mosses and liverworts are taken next, followed by ferns, horsetails, club-mosses, the pine family, the grass family, etc., though Monocotyledons and Dicotyledons, ending with the Compositæ. The treatment reminds one of that in Arthur, Barnes and Coulter's "Plant Dissection," of course much simplified.

The author has adopted a modification of Eichler's sequence of the families of the flowering plants. Very properly, too, he makes a distinction between "families" and "orders" (. 241).

The book will, if used by our high schools, do much to improve the quality of botanical teachings below the colleges and doubtless will stimulate some of our colleges also to better work than they have been doing.

CHARLES E. BESSEY.